InHand Networks

Compact Industrial Router
4G LTE, Dual SIM and Dual Ethernet Ports

InRouter302 Series
Industrial LTE Router

The InRouter302 (IR302) is an IoT cellular router that integrates 4G LTE, Wi-Fi, and VPN technologies to provide an easy, reliable, and secure Internet connectivity. With technologies such as 4G wireless wide area network and Wi-Fi wireless local area network, it provides uninterrupted multiple network access capabilities, and with its comprehensive security and wireless services, it realizes up to 10 thousands equipments networking and provides high-speed data access for equipment networking.

This product is suitable for the networking of unattended devices and sites. It is embedded with watchdog and multi-layer link detection mechanisms to ensure reliable and stable communications. The router can be deployed easily to build large scale networks scaling up to tens of thousands of devices. Using our InHand Device Manager cloud platform, users can manage their network efficiently.

The IR302 can be used in a wide range of industrial and commercial IoT applications, providing an option of good balance between cost and performance.

Key industries:

- Smart Commerce
    - ATM, POS
    - Unattended kiosk
    - Digital signage
    - Retail stand
- Smart Energy
    - EV charging
    - Power distribution, Meter reading
- Smart City
    - Heat & Water supply
    - Gas supply security, Traffic management
- Smart Manufacturing
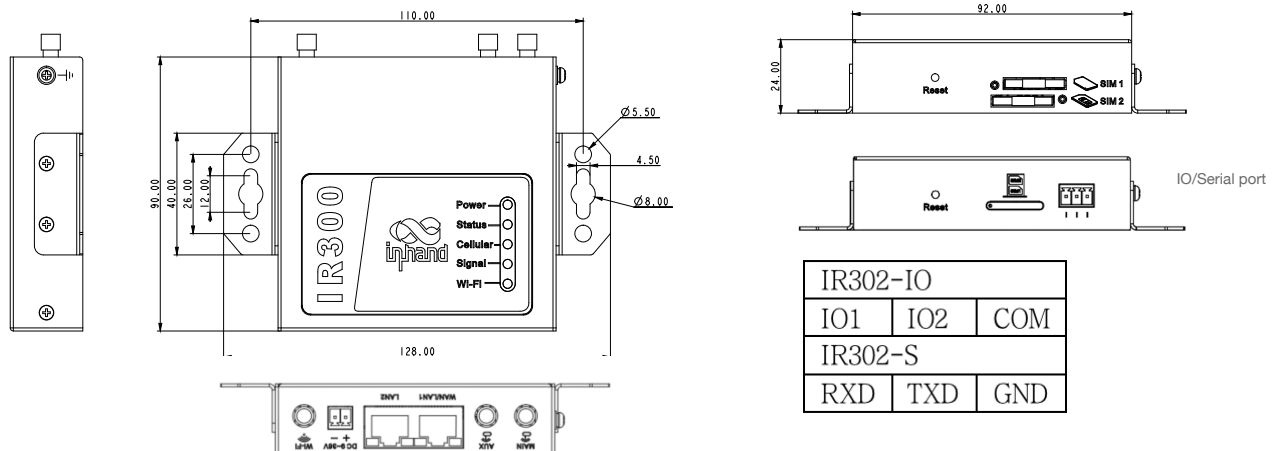   - Medical device networking and other applications

Application Case

ATM

IR300

4G

Monitoring Center

InHand DeviceManager Cloud
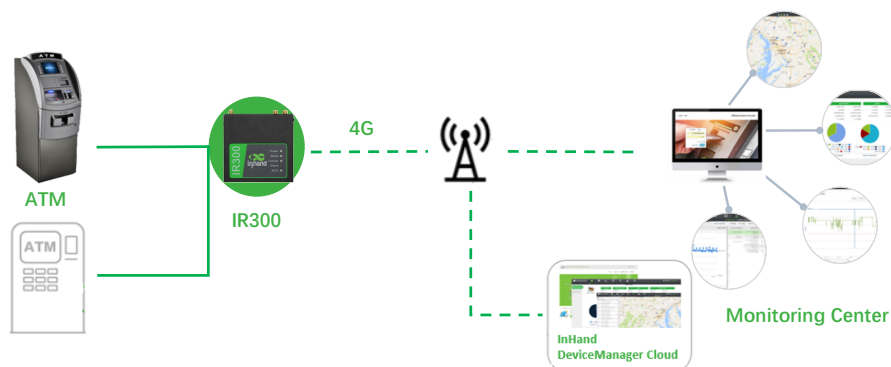
Features and Advantages

- Supports both high-speed LTE CAT 4 and low-speed LTE CAT 1 CAT M1/NB IoT networks
- Dual Ethernet ports, WAN/LAN
- Multiple VPN protocols
- Built-in link redundancy, dual-SIM failover, ensure uninterrupted communications
- Supports InHand Device Manager cloud platform for efficient central network management
- Compact in size, easy to install

Uninterrupted network access

Supports fast LTE WAN networks for business continuity and WAN diversity. Get device connected easily with the widely available 4G cellular network. Three optional network types: LTE CAT 4 (150/50Mbps DL/UL), LTE CAT 1 (10/5Mbps DL/UL), and LTE CAT M1 (1119/588kbps, DL/UL) and NB-IoT(127/158.5kbps DL/UL).

Supports Wi-Fi, both AP & STA modes, for users to easily set up secure wireless networks. Supports 802.11b/g/n, transmission rate up to 150Mbps, WEP/WPA/WPA2 encryption. Failover between 4G and Wi-Fi or 4G and WAN, effectively ensuring uninterrupted data transmission.

Strong security protection

- Data transmission: IPsec VPN (IKEv1, IKEv2), L2TP, PPTP, OPEN VPN, GRE and CA certificate.
- Network protection: supports SPI (Stateful Packet Inspection), SSH (Secure Shell), intrusion protection (forbidden ping), DDoS defense, attack defense, IP-MAC binding, etc., protecting the network against external attacks.
- Device access: supports user hierarchical authorization (CLI only), implementing secure access management by providing different roles and different permissions.

High reliability and stability

- Link layer detection: continuously detecting and auto redials when dropped off to maintain link connection.
- Dual SIM failover: automatically switches to the more stable carrier network.
- PPP layer detection: maintains connection to the carrier network, preventing forced hibernation, keeping network communications smooth.
- VPN tunnel detection: maintains stable connection of the VPN tunnel, ensuring continuous transmission.
- Device self-recovery: embedded hardware watchdog, self-recovers from malfunctions, maintaining high device availability.

Easy to use

Allows multiple network management methods including CLI, WEB, and a network management platform. Functions of the WEB interface are grouped according to the habits of IT personnel, which logic is clear immediately.

Central management and deployment

Supports InHand Device Manager cloud platform to facilitate remote monitoring and central management of large-scale device networks. Batch configure large numbers of devices, efficiently deploying and managing device networks.Add the user experience plan to access The InHand Networks cloud platform to enjoy efficient and convenient services

Industrial-grade design

Metal shell, IP30 protection. Level 2 on EMC. Ethernet ports support 1.5KV isolation transformer protection. Wide operating temperature: -20°C~70°C. Wide voltage input: DC9-36V.

Dimensions (mm)

IR302-IO		
IO1	IO2	COM
IR302-S		
RXD	TXD	GND

Product Specifications

InRouter302 Hardware Specifications

Hardware Platform

CPU Platform	580MHz	RAM	128MB DDR2
Flash	32MB SPI		

Interface

Ethernet Port	IR302: 2*10/100Mbps fast Ethernet port, LAN/WAN port 1.5KV network isolation transformer protection
Serial Port (*Optional)	1*RS232
I/O (*Optional)	Supports 2*IO (DO or DI can be configured)

* Alternatives for I/O or Serial port

Power Supply	DC9-36V, over-current protection, anti-reverse connection, 2 PIN industrial terminal block
Reset Button	Pinhole reset button
SIM Card	Dual drawer-type SIM card slots. 2FF SIM
Wi-Fi (Optional)	IEEE 802.11b/g/n, 150Mbps
Antenna Connector	3G/4G: SMA x 1; Wi-Fi: RP-SMA x 1 Note: North America models (FQ38, FQ33): 2 x SMA 4G antenna connectors.
Ground Terminal	Supports

Mechanical Specs

Dimensions	90 x 90 x 25mm	Weight	259g
Installation Method	Panel mounting, rail mounting	Protection Rating	IP30
Housing	Metal	Cooling	Fanless

Power Rate

Working Power	100-120mA@12V	Standby Power	80-90mA@12V
Peak Power	190mA@12.0V		

Wi-Fi Transmit Power

Transmit Power	802.11b:16dBm +/-2dBm(11Mbps) 802.11g:16dBm +/-2dBm(54Mbps) 802.11n@2.4GHz:16dBm +/-2dBm(HT20 MCS7) 802.11n@2.4GHz:16dBm +/-2dBm(HT40 MCS7)

Ambient Environment

Storage Temperature	-40 ~ 85°C	Operating Temperature	-20 ~ 70°C
Ambient Humidity	5 ~ 95% (non-condensing)		

Indicator

LED	Power, Status, Cellular, Wi-Fi, cellular Signal

EMC

Static	EN61000-4-2, level 2	Radiation Electric Field	EN61000-4-3, level 2
Pulsed Electric Field	EN61000-4-4, level 2	Surge	EN61000-4-5, level 2
Conducted Disturbance Immunity	EN61000-4-6, level 2	Shock Wave Resistance	EN61000-4-12, level 2
Power Frequency Magnetic Field Resistance	EN61000-4-8, horizontal / vertical 400A/m (>level 2)		

Physical Specs

Shockproof	IEC60068-2-27	Vibration Resistance	IEC60068-2-6
Free Fall	IEC60068-2-32		

Certificate

CE, FCC, PTCRB, IC, Verizon, AT&T, E-mark, T-mobile (in progress)

InRouter302 Software Specifications

Network Connection

Network Access	APN, VPDN, PrivateNetwork	Access Authentication	CHAP/PAP
LAN Protocol	ARP	WAN Protocol	PPP, PPPoE, DHCP
Network Type	GSM/GPRS/EDGE, UMTS/HSPA+/EVDO/TD-SCDMA, TDD LTE/FDD LTE (Please refer to the Ordering Guide for frequencies.)		

Network Protocol

IP Application	Ping, RouteTrace, DHCP Server, DHCP Relay, DHCP Client, DNS relay, DDNS, Telnet
IP Routing	Static routing
NAT	Supports network address translation

Security

Network Security	Stateful Packet Inspection (SPI), DoS attack defense; Multicast filter/Ping probe packet, Access Control List (ACL); Content URL filter, port mapping, virtual IP mapping, IP-MAC binding
Data Security	Supports PPTP, L2TP, GRE, IPSEC VPN (IKEv1, IKEv2), OPENVPN protocols Supports CA digital certificate

Reliability

Hot Backup	VRRP hot backup
Link Detection	Sends heartbeat packets to detect, auto redials when disconnected
Dual SIM Failover	Supports dual SIM failover
Embedded Watchdog	Device runs self-detection, auto recovers from malfunctions

WLAN (Optional)

Protocol	IEEE 802.11b/g/n	Rate	Up to 150Mbps
Mode	AP, Client and WDS modes		
Security	Open system, shared key, WPA/WPA2 certification WEP/TKIP/AES encryption		
Transmission Distance	80 meters by line of sight (Actual transmission distance depends on environment of the site.)		

Network Management

QoS Management	Bandwidth limit, IP speed limit
Configuration	Telnet, web, ssh and console
Upgrade	Web, DeviceManager
Log	Local system log, remote log, and serial export of log. Power down saving of important logs.
SMS Functions	Status query, configuration, restart
Dial-on-demand	Dial-on-demand, data / SMS activation
Network Management	Supports InHand DeviceManager, batch management Add the user experience plan to access The InHand Networks cloud platform to enjoy efficient and convenient services.
SNMP	SNMP v1/v2c/v3, supports SNMP TRAP
Traffic Management	Supports data traffic threshold, traffic statistics and traffic alarm
Alarm	System restart alarm, LAN port online/offline alarm, data traffic alarm, SIM card failure alarm, etc.
Maintenance Tools	Ping, route tracking, network speed test
Status Query	System status, modem status, network connection status, and routing status

Ordering Guide

Model	Region (Operator)	Network Type	Model code: IR302-<WMNN>-<WLAN/NA>-<IO/S/NA>		
			<WMNN>: Cellular Type & Module	<WLAN/NA>: Wi-Fi	<IO/S/NA>
IR302-LQ28-<WLAN/NA>-<IO/S/NA>	China	LTE CAT4	FDD: B1/B3/B5/B8 TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8 TD-SCDMA: B34/B39 EVDO/CDMA: BC0 GSM: B3/B8	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ58-<WLAN/NA>-<IO/S/NA>	Europe & APAC	LTE CAT4	FDD: B1/B3/B7/B8/B20/B28A WCDMA: B1/B8 GSM: B3/B8	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ38-<WLAN/NA>-<IO/S/NA>	North America AT&T, Verizon	LTE CAT4	FDD: B2/B4/B5/B12/B13/B14/B66/B71 WCDMA: B2/B4/B5	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ78-<WLAN/NA>-<IO/S/NA>	Australia, Latin America	LTE CAT4	FDD: B1/B2/B3/B4/B5/B7/B8/B28 TDD: B40 WCDMA: B1/B2/B5/B8 GSM: B2/B3/B5/B8	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ33-<WLAN/NA>-<IO/S/NA>	North America, AT&T, Verizon	LTE CAT1	FDD: B2/B4/ B5/B12/B13/B25/B26 WCDMA: B2/B4/B5	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ53-<WLAN/NA>-<IO/S/NA>	EMEA	LTE CAT1	FDD: B1/B3/B7/B8/B20/B28 WCDMA: B1/B8 GSM/EDGE: B3/B8	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-LQ00-<WLAN/NA>-<IO/S/NA>	China	LTE CAT1	FDD: B1/B3/B5/B8 TDD: B34/B38/B39/B40/B41 GSM: 900/1800MHz	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 <NA>: no interface
IR302-FQ02-<WLAN/NA>-<IO/S/NA>	Global	LTE CATM/NB	CAT M: B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85 CAT NB: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85 GSM/EDGE: 850/900/1800/1900 MHz	WLAN: Wi-Fi <NA>: no Wi-Fi	IO: 2*IO S: 1*RS232 NA: no interface
IR302-EN00-<WLAN>-<IO/S/NA>			No cellular module	WLAN: Wi-Fi <NA>: no Wi-Fi	
Example:			IR302-FQ38-WLAN: CAT 4, AT&T, VzW, Dual Ethernet port IR300 series cellular router, support IPSec / PPTP / L2TP / OPEN VPN, supports FDD, and WCDMA networks, supports Wi-Fi AP & Client mode		

Note: Users are asked to join InHand User Experience Plan at fist time login. If user agreed to join, the router will connect to InHand DeviceManager portal. If users want to disable it, please go to Services->User Experience Plan to change the setting.